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**TRANSFORMING LOGISTICS IN SUPPORT OF THE
21ST CENTURY OBJECTIVE FORCE**

BY

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TRANSFORMING LOGISTICS IN SUPPORT OF THE 21ST CENTURY OBJECTIVE FORCE

by

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ABSTRACT

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“Soldiers on Point for the Nation...Persuasive in Peace, Invincible in War.” These are the words of the Army’s Vision for the future. The Objective Force, as outlined in the Army’s Transformation Campaign Plan, is the force that achieves this vision and meets the transformation endstate. As the Army, and the military overall, transforms to meet future challenges and missions, a revolution in logistics is taking place to ensure support across all spectrums of conflict, is more effective, efficient and results in a reduced logistics footprint. This paper examines the Army’s transformation in logistics and offers insights into possible future concepts.

TABLE OF CONTENTS

ABSTRACT	III
LIST OF ILLUSTRATIONS.....	VII
TRANSFORMING LOGISTICS IN SUPPORT OF THE 21ST CENTURY OBJECTIVE FORCE.....	1
 THE ARMY TRANSFORMATION	1
 Structuring the Force for Today and Tomorrow.....	2
 TRANSFORMING LOGISITICS – THE PATH TO THE FUTURE.....	4
 Focused Logistics	4
 The Revolution of Military Logistics.....	5
 Concepts for Future Logistics	10
 CONCLUSION.....	13
ENDNOTES.....	19
GLOSSARY.....	21
BIBLIOGRAPHY.....	23

LIST OF ILLUSTRATIONS

FIGURE 1- TRANSFORMATION PLAN.....	3
FIGURE 2 – FUTURE LOGISTICS SUPPORT.....	13

TRANSFORMING LOGISTICS IN SUPPORT OF THE 21ST CENTURY OBJECTIVE FORCE

"To adjust the condition of the Army to better meet the requirements of the next century, we articulate this vision: 'Soldiers on point for the nation transforming this, the most respected army in the world, into a strategically responsive force that is dominant across the full spectrum of operations.' With that overarching goal to frame us, the Army will undergo a major transformation..."

Army Chief of Staff Gen. Eric K. Shinseki
October 1999, in his speech launching
Army Transformation.

THE ARMY TRANSFORMATION

Army Transformation is based on the October 1999 Army Vision articulated by the Secretary of the Army and the Chief of Staff of the Army designed to posture the Army to better meet the demands of the 21st Century. "Soldiers on Point for the Nation...Persuasive in Peace, Invincible in War." That is the general plan, and succeeding layers of the vision flesh it out, starting with an overriding requirement, key principle and objective statement.¹

While readiness continues to be top priority, the Army must maintain the capabilities to meet the primary mission of fighting and winning the nation's wars, supporting the national military strategy, and fulfilling the requirements of the Joint Strategic Capabilities Plan and requests from the commanders in chief (CINC) of the Unified Commands.

The objective statement sets the goal for Transformation, charging the Army to achieve strategic dominance across the entire spectrum of operations with seven broad goals.² The Army must become a more responsive, deployable, agile, versatile, lethal, survivable and sustainable entity. Transformation represents the sweeping measures to accomplish this vision and meet the requirement and objective.

Today's Army force structure and supporting systems were designed for a different era and enemy. Crises now range from Major Theater War and regional conflicts to small-scale contingencies and Support and Stability Operations (SASO). A newly designed force will be affected by *variety* in socio-political climates, cultural environments, force mix and threats; the need for increased *speed* in response time; the desire for *precision* to limit collateral damage and avert friendly casualties; and the continued need for force, the age old capability to compel others. Tomorrow's forces will possess a greater reliance on joint and full spectrum capabilities

with leaders who are decisive in both initiative and aggressiveness. Advances in Information Technology will provide leaders with the capability to make faster decisions through collaborative and parallel information, eliminating the need for hierarchical and sequential decision making techniques. There will be a change in fighting doctrine from one that is based upon a "make contact with the enemy, develop the situation, then maneuver the force" model to one that is based upon "understanding the situation, maneuver the force, then make contact at your time and place and method of choosing."³ Future forces can expect operations to be more dispersed and decentralized, often operating in non-contiguous battle space.

Structuring the Force for Today and Tomorrow

Built around the objective of developing a force that has both the decisive warfighting capabilities found in heavy forces and the responsiveness of today's light units, the transformation strategy focuses on three force structures; the **Legacy Force**, the **Interim Force** and the **Objective Force**. These forces will be integrated in three major phases of the Transformation Campaign; the Initial Phase (I), the Interim Capability Phase (II), and the Objective Capability Phase (III). These phases may be overlapping and/or concurrent.⁴

During Phase I, the **Legacy Force** will continue to support the National Military Strategy and remain engaged across the spectrum of operations. The Army will modernize the force through recapitalization of selected systems, insertion of evolving digital technologies and enhancements in lethality and survivability. The first of the *Transformed Forces*, two Initial Brigade Combat Teams, will be formed to develop insights and lessons-learned necessary for developing the **Interim Force**.

The major objective of Phase II is the *fielding* of the **Interim Force**, comprised of five to eight Interim Brigade Combat Teams (IBCT), including at least one brigade in the Reserve Component. This Interim Force will be a combined arms, full spectrum capable force that is rapidly deployable and highly mobile at strategic, operational and tactical levels.⁵ Current plans envision the Interim Force with increased organic combat, combat support (CS), and combat service support (CSS) while remaining C-130 transportable. The force will be equipped with lightweight artillery and an Interim Armored Vehicle (IAV) to ensure lethality. These units will be capable of being a member of a precision, combined arms, rapid reaction, joint/coalition task force. Operational concepts for the force include, but are not limited to: rapidly deployable with a decreased sustainment footprint, Joint and Coalition interoperability, combat capable on arrival, and a reach-back ability for intelligence analysis and logistics. The Interim Force is designed to

bridge the gap between today's force capabilities and the **Objective Force** of the future. Conversion to the Interim Force design will continue to leverage emerging technologies until Science and Technology (S&T) can provide the systems to support the desired Objective Force characteristics.⁶

Phase III, the Objective Capability Phase is focused on the **Objective Force**. It begins with the fielding of the first Objective Force brigade (fully equipped, manned, and trained to meet capabilities in the Organizational and Operational Concept) and ends when the Army is totally converted to the Objective Force capability. The Objective Force will be capable of rapidly responding to crises and succeeding across the entire spectrum of future operations. Plans are for the force to dominate a distributed, nonlinear battlespace against a wide range of both conventional and unconventional threats. Emerging technology serves as the centerpiece for the transition to the Objective Force. The Army's S&T community is dedicating its efforts to answering key questions on deployability, survivability and lethality technologies that will drive the ultimate configuration of the force. Although the Chief of Staff, Army, has set milestones for initial fielding and production as part of the transformation campaign, General Shinseki has recently stated, "when the technologies are mature and when production lines are ready, we will begin to field the Objective Force in unit sets." This leaves the actual fielding date an open ended question. Figure 1 depicts the Army's plan for transforming to the Objective Force.

The Army Transformation

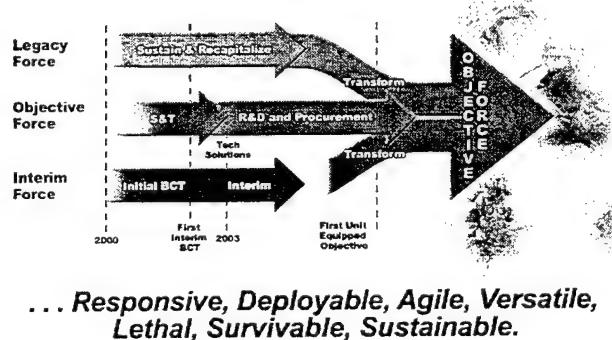


FIGURE 1- TRANSFORMATION PLAN

It is key to note that during Phase II of the Transformation Campaign, the Army will consist of both Legacy and Interim Forces. Although the goal of Phase III is to field Objective Force capabilities, it is possible that some recapitalized Legacy Force systems may still part of the overall force.

A vision to better meet the demands of the 21st Century is the driving force behind current (and future) efforts to transform the military into a more responsive, deployable, agile, versatile, lethal and sustainable entity. To meet this vision and fulfill the future roles of the military will require innovative changes in logistics. Joint Vision 2020's Focused Logistics program and the corresponding revolution in military logistics will bridge the path to the future and make way for future logistics concepts.

TRANSFORMING LOGISTICS – THE PATH TO THE FUTURE

Focused Logistics

Joint forces remain critical to success. In his article for Military Review, Focusing Logistics for the Future, General Jimmy D. Ross, then Deputy Chief of Staff, Logistics, Department of the Army, outlines the way of the future for support operations. Multinational and joint formation support will be a key element of future operations. Sustainment in a joint and combined environment requires interoperability doctrine; an essential element for coordination and execution of Combat Service Support (CSS).⁷ Merged forces tend to compensate for weakness, but merging often leads to cumbersome logistics due to redundancy and a lack of interoperability. To successfully operate in the joint spectrum there is a need for synchronization and focusing of logistics efforts across the force. Focused Logistics is the fusion of information, logistics and transportation technologies to provide rapid crisis response, track and shift assets while en route, and to deliver tailored logistics packages and sustainment directly at the strategic, operational and tactical levels. The basic concepts of the program include, but are not limited to, Anticipatory Logistics Support, Split Based Operations, Enhanced Throughput, Velocity Management, Total Asset Visibility and Battlefield Distribution Systems. To meet these concepts the key enablers will be Integrated Maneuver and Combat Service Support Systems (to enhance Situational Awareness and provide a common operation picture of the battlefield), modular organization of capabilities (and supplies), new Movement Tracking Systems, and wireless management of the entire logistics structure. Focused Logistics will provide military capability by ensuring delivery of the right equipment, supplies, and personnel in the right quantities, to the right place, at the right time to support operational objectives.⁸ Focused Logistics allows for linking systems with information technology to provide real time asset visibility with a relevant common operational picture. This in turn provides more effective links between the supporter and the supported. New systems will incorporate enhanced

decision support tools to improve analysis and planning in anticipating warfighter requirements. They will also provide a seamless connection to the commercial sector to take full advantage of applicable business practices and commercial economies. These processes, when combined with improved organizational structures, will result in improved end-to-end management of the entire logistics system and provide real-time control of the logistics pipeline to support the joint force commander's priorities.⁹ As Focused Logistics is developed, logistics systems must become more sensitive to real-time information in order to anticipate requirements and improve response times to end users. Predictive logistics, as practiced today, relies on estimate data developed to support forces in World War II and Korea. Usage and consumption data is based on a force structure that is most likely very different from how the military will fight in the future. Focused Logistics attempts to break the paradigm and establish links between user, supplier and the production base to maximize use of application projections and depletion rates. This allows for solid estimates of future requirements. The concept of Focused Logistics, however, is only one of many changes stemming from revolutions in logistics management.

The Revolution of Military Logistics

The Army's Transformation Campaign Plan continues efforts to revamp our powerful but sluggish post-Cold War Army into a responsive, sustainable force capable of projecting, sustaining and protecting the Nation's interest while fighting our wars well into the 21st century.¹⁰ Making the Army Vision a reality requires a quantum leap in strategic responsiveness and corresponding revolution in military logistics (RML).¹¹ To paraphrase a former Chief of Staff, Army, a revolution of military affairs requires a revolution of military logistics. The two key domains of this revolution are force projection and force sustainment.

Power projection of forces, a key component of Joint Vision 2010 and 2020, must serve as one of the cornerstones in the military's evolving strategy to meet future requirements. Integration and changes in logistics and support methodologies must follow in kind.

Our country's forward presence will be achieved from a balance of strategic mobility of aircraft, sealift and pre-positioned stocks and forces. This mobility "triad" must be capable of supporting a diverse range of options from reinforcing forward presence troops, to deploying contingency forces in response crises worldwide, and sustaining the total deployed force. Additionally, these capabilities are essential to the Power Projection Strategy outlined in Joint Vision 2010 and 2020.

Transformation requires a substantial change in strategic responsiveness and in turn force projection. During the Cold War, the United States committed to our NATO allies to deploy ten divisions in ten days while exploiting the use of our Civil Reserve Air Fleet, pre-positioning of materiel configured to unit sets, and using countless iron mountains of supplies secured in numerous sites in Central Europe.¹² This planning may have been adequate for Europe, but is much too narrow for the changing world of 2000 and beyond. The Objective Force of the 21st century will be capable of deploying a brigade in 96 hours, a division in 120 hours, and five divisions in 30 days, to any location worldwide.

Intervening forces of the future will have to deploy quickly, then disperse immediately from their entry points and begin conducting and sustaining operations.¹³ The shifting role of the United States Navy and, in a sense the military overall, centers on projecting influence and power ashore with forces shaped for joint operations.¹⁴ Joint Vision 2010 and 2020 are both based on the strategic concepts of decisive force, overseas presence, strategic agility, and power projection. Power (Force) Projection will rely on four key factors: units configured, equipped and trained to deploy rapidly, definitive doctrine and skills for deploying forces, sufficient lift, and logistics systems designed to sustain without limiting or burdening operations. Although the IBCT is designed to address required changes in force structure and training, lift and logistics systems to meet future needs remain a significant challenge in designing support for the 21st century.

Joint Publication 4-0, Doctrine for Logistics Support of Joint Operations, defines deployment and rapid distribution as the processes of moving multi-service forces to an operational area coupled with the accelerated delivery of logistic resources through improved transportation and information networks. These integrated deployment, distribution, and informational networks will provide the warfighter with improved visibility and accessibility of assets from source of supply to point of need.¹⁵ Logistics systems supporting projection of joint power will rely on optimized use of strategic air and sealift. Programs such as the C17 Strategic Lift Aircraft program, Lighter Than Air transport ships capable of simultaneously moving a force and its equipment, high speed sealift platforms with shallow draft capability, and programmed use of commercial transportation will deploy the force of the future. A pre-cursor to the Army's current Transformation Plan, the congressionally mandated Mobility Requirements Study (MRS) recommended enhancement of the strategic mobility base. Although focused on the 1990 defined position of deploying a five division corps with associated support in 75 days, the concepts still hold true for the future. Strategic mobility, as mandated by the MRS and in progress through the Army Strategic Mobility Plan (ASMP), is directly tied to the "triad"

mentioned earlier; enhanced sealift, airlift, and pre-positioned stocks and equipment. Specific mandated enhancements included acquisition of large, medium-speed roll-on-roll-off (LMSR) ships and expansion of the Ready Reserve force for sealift; acquisition of 120 C-17 aircraft for strategic lift; and strategic pre-positioning of sets of equipment.

The LMSR is a self-sustaining ship capable of simultaneous roll-on-roll-off (RORO) and lift-on-lift-off operations. Capable of delivering cargo onto a pier or offload in-stream with a sea state 3 (3.5 to 5 foot waves and a wind speed of 13.5 to 16 knots) and traveling at 24 knots, the LMSR is both efficient and effective. The C-17 program has been hailed as the strategic airlifter of the future. Designed specifically with military-unique requirements in mind, the C-17 can transport up to 102 paratroopers and 167,000 pounds of equipment and supplies, and deliver equipment and supplies by five different methods. With outsized capability and shape, loading is more efficient than with the C-5 and the payload is twice that of the C-141. Capable of landing on shorter, less developed airstrips, back up under its own power and offload equipment directly onto the ground provides the direct-delivery capability needed during future operations. As the third member of the mobility triad, pre-positioned equipment and stocks, specifically those afloat, add both flexibility and versatility. A mixture of combat, combat support and combat service support equipment and supplies, the prepo-afloat currently contains a heavy brigade set, complete with sustainment and munitions supplies; port opening equipment; and equipment to offload ships in open water. The Army War Reserve – 3 (AWR-3) ships provide the capability to rapidly deploy equipment and supplies to a theater while maintaining the flexibility to move to a second theater if necessary. Easily tailorable, the AWR-3 consists of four distinct modules which can be formed to support small humanitarian missions; peacekeeping and humanitarian support missions; limited combat and peace enforcement operations; and full combat and support operations.

Research and development efforts continue to eye the future requirements of the Objective Force. The S&T community is already examining the possibilities of aircraft that can accommodate twice the freight in half the wingspan to enhance aircraft on ground numbers without compromising loading times at some the world's busiest airports as well as "Lighter Than Air" Transports capable of moving up to 500 tonnes. Aircraft manufacturers are developing concepts for aircraft that deliver cargo pods capable of carrying 150,000 pounds and Advanced Theater Transport Systems to replace the C-130 that have tilt rotor technology and are designed to on load and off load palletized cargo and containers/flattracks without the use of ground based material handling equipment. Future sealift designs include shallow draft catamarans capable of transporting up to 325 troops and 545 tons of equipment while traveling

at 40 knots. Tested by the Australian military during operations in East Timor, the High Speed Vessel X1 (HSV-X1) has been reviewed by the Joint Requirements Board for use in logistics and firepower support for special operations. Directly linked to the Army's future Theater Support Vessel, the HSV-X1 is currently being tested by the Marine Corps for potential future applications.

The true essence of RML is force sustainment. Force sustainment demands high readiness and capability to quickly resolve any shortfalls to ensure the first five divisions of the Objective Force can deploy and arrive in theater within four to 30 days. The Army must then be capable of sustaining the committed force throughout any mission profile over lines of communication (LOC) exceeding 10,000 miles.¹⁶ The operational concept to achieve this readiness and sustainment goal is the Distribution Based Logistics System (DBLS). Distribution Based Logistics (DBL) relies on distribution velocity and precision rather than redundant supply mass to provide responsive support to warfighters.¹⁷ DBL is comprised of three tenets: visibility, capacity, and control.

Visibility. Near real-time situational awareness and understanding, or visibility, has been a major objective of Force XXI experimentation. The advent of the new Army Vision has only emphasized the need for improved visibility. Visibility can be grouped into three major categories. First is visibility of the supported war fighting units, which includes commander's priorities and intent. Complete understanding of what the commander wants and the logistics implications ensures the logistician is able to anticipate and respond accordingly to his needs. The second category is logistic capabilities and constraints. That is, real-time situational understanding of such things as infrastructure, materiel systems, inventories, and transportation resources. Visibility of requirements and priorities at and for the theater and strategic level is the third category. Conveying situational understanding to supporting logistics organizations, such as from the corps support group to the theater support command or the Defense Logistics Agency, becomes increasingly important as the Army loses autonomy on the non-contiguous battlefield of the future.¹⁸ Improved links between operations and logistics will result in precise time-definite delivery of assets to the warfighter. Systems such as Global Combat Service Support System-Army (GCSS-A), Total Asset Visibility (TAV) and Operational Supply Capability (OSC), all linked through a network centric global net called the Global Internet Grid (GIG) will ensure a common operating picture and increased situational awareness from foxhole to depot and back again.

Capacity. The logistics force must have the physical capacity to act on the knowledge provided by real-time visibility. Capacity includes an array of materiel systems from trucks to

forklifts; lean, but adequate inventories; road, rail and facilities infrastructure; and units filled with skilled personnel. These capabilities include the materiel for physical distribution within theater and from the Continental United States by military or commercial vendor. Programs that are “platform-centric” and training focused on “leader-centric” tasks will be two of the cornerstones. Common platforms capable of supporting intermodal transportation will enhance distribution capability across all levels of infrastructure on the battlefield. Leader-centric training will develop future leaders to assess situations and information and make decentralized decisions to positively effect combat operations. Although visibility based in nature, embedded sensors and prognostics/diagnostics can be grouped into capacity because of their ability to allow the logistician to anticipate future requirements.

Control. Some of the most important logistics modernization efforts fall under the category of control. These include the tactical force structure of brigade combat teams; the theater support command; and the single seamless Army logistics organization, the Army Readiness Command.¹⁹ This Army Readiness Command will serve as the single Army wide provider to focus improved battlefield distribution, split based and reach back operations, TAV, and assured communications; the key elements of successful logistics for the transformed force. Control also includes the necessary doctrine and law, policy, and regulation. Control encompasses the expert leaders and practitioners trained by the new leader centric training models, who apply logistics capabilities to satisfy prioritized operational requirements.

The RML has always envisioned a continuous and dynamic transformation and is captured in the Army Strategic Logistics Plan (ASLP). Much akin to concepts discussed already, the key aspects of the ASLP include a single Army-wide provider, improved battlefield distribution, split-based and reachback logistic operations, total asset visibility, and assured communications. Designed as a flexible strategy to enhance both process and requirements, the ASLP has grown and been revised to meet the objectives of the new Army Transformation Strategy, driven by the much more aggressive Army Vision. The overall intent of RML is to transform Army logistics into a distribution based system that substitutes distribution velocity and precision for logistics mass to provide the right stuff at the right place at the right time – at best value.²⁰ “Stuff” is best defined as everything and anything from personnel to supplies and equipment.

The envisioned endstate of the Focused Logistics and RML programs is the DBLS. This system of innovative policies, doctrine and concepts; reengineered logistic functional processes; redesigned organizations; new materiel systems with embedded sensors and prognostics; advanced information, decision support and command and control systems; and well led, highly

trained soldiers and civilians to operate and manage it, will support the Objective Force of the 21st Century.

Concepts for Future Logistics

Aggressive, innovative ideas are the key to the Army's logistics transformation. LTG Mahan, current Deputy Chief of Logistics, Department of the Army, has stated that the key enablers for Logistics Transformation are reduced logistics footprint, reduced logistics costs, and increased strategic responsiveness. This transformation will require a network centric log information system, integrated real-time situational awareness, leveraging technology, strategic mobility, en route infrastructure to support force projection, and integration of deployment and distribution to create one system that deploys and sustains troops. Enhancements in methods for projecting logistics, design of future combat systems, integrated information systems and new doctrinal guidelines for supporting the force all lead to improvements in enabling the force of the 21st Century.

Joint Logistics Over the Shore (JLOTS) operations are becoming more commonplace in projecting and sustaining deployed forces. An agile infrastructure comprised of forward positioned assets and supplies coupled with pre-positioned equipment afloat creates the ability to rapidly place forces where needed and sustain them. In addition, a new concept being examined by the United States Marine Corps centers on sustaining Operational Maneuver From the Sea (OMFTS) with Ship to Objective Logistics (STOL). STOL operations can leverage information and speed to replace logistics mass and sustain a force conducting maneuver within the overarching concept of OMFTS.²¹ Applying the basic concepts across a joint force will allow optimization of logistics efforts to support all services and eliminate the burden typically associated with the logistics tail of a Joint Task Force (JTF). Integrate STOL with an enhanced theater distribution system, contracted logistics support, and applied concepts focused on system logistics from supplier to supported force and the package becomes complete.

The overarching concept behind STOL is Sea Based Logistics. Sea-based logistics is an operational/tactical level naval concept primarily focused on support of amphibious operations. With advances in rotary wing aviation and evolution in Air Assault doctrine, Army forces are now capable of penetrating deeper into enemy territory with reduced reliance on ground LOCs. Transformation offers new opportunities to capitalize on this concept with technology, doctrine and force structure designed to support forces from over the horizon without the requirement to build up a beach head and seize control of objectives to secure ground LOCs.

Is sea-based logistics a relevant concept for the Army (or future ground maneuver forces)? Dominant Maneuver, Precision Engagement, Full Dimensional Protection, and Focused Logistics are key aspects of Joint Vision 2010 and 2020. Sea Based Logistics reduces and/or eliminates the logistics footprint on land and enhances speed and flexibility of the maneuver force. The elimination of total reliance on ground LOCs increases agility and ability to engage the enemy while the reduced logistics footprint, with fewer LOCs to secure, allows for more focus on the combat mission. In relation to Focused Logistics, sea based logistics provides the opportunity to throughput configured loads (strategic, operational, and tactical) directly to the customer from strategic mobility platforms.

The concept, as outlined in the November 1998 issue of the United States Marine Corps Gazette, is not much different from the Army's plan for revolutionizing logistics: Network based, automated logistics information to provide in stride sustainment for maneuvering forces; replace mass with information and speed; and make use of predictive maintenance technology through embedded sensors. In stride sustainment almost mirrors DBL and entails automated requisition and distribution management systems that reduce human input, accelerate materiel movement, and reduce costs. Instead of vast quantities of material being pushed forward to stockpile, users communicate consumption data that will "pull" tailored support to maneuver forces. Enhanced knowledge of in-transit inventories through TAV will refine allocation of transportation resources, improve item availability, and increase velocity of material movement through the system.²²

Sea based logistics or STOL neatly dovetails with the concept of the Intermediate Support Base (ISB). Previously designed as staging bases or trans-shipment points from one mode of transportation to another, the ISB is taking on a new role in support doctrine. Future ISBs will continue to ensure responsive support to the warfighter while reducing the logistics footprint in the battlespace. The objective ISB is a true support base with pre-positioned stocks and a distribution hub where close support can be achieved without actually being in the battlespace. Loads are pre-configured to support the force and facilitate rapid distribution to the battlespace. Linked with STOL, the net effect is a more responsive capability available to the CINC.

Although not the first research efforts into the benefits of commonality, the Program Executive Office for Armored Systems Modernization of the late 1980's/early 1990's posited a concept for a "Family" of military vehicles based on a common chassis, produced on identical production lines and sharing as much as 92% commonality of parts. Research indicated substantial cost savings over the life cycle of the vehicles. More importantly, commonality across vehicles reduced the training requirement for mechanics and the amount of repair parts

maintained at both wholesale and retail levels. This concept has been revived as part of the Army's Transformation Program and is becoming an integral part of Research and Development efforts presently underway. For the Interim Force, the Army has selected the Light Armored Vehicle (LAV) III to become its Interim Armored Vehicle because the service wanted commonality across a family of vehicles that would cost less to operate and maintain. LAV III will use the same Caterpillar engine as the Stewart and Stevenson Family of Medium Tactical Vehicles and 85 percent of its parts are common to other fielded systems.²³ The Objective Force vision is for a Future Combat System (FCS). A common platform family of systems to meet the needs across the force from combat to sustainment. This "commonality" reduces volume and complexity of repair parts, in essence assisting in the goal of reducing the logistics footprint on the ground and increasing deployability.

Critical to success during the transformation period and beyond will be the ability to anticipate and react to the environment. The most important change required to meet the Army vision is a quantum reduction in sustainment requirements, both cultural and physical.²⁴ The outdated model of reacting to demands for logistics services and pushing huge quantities of supplies forward without a definitive requirement must be put aside. The key to future success will be anticipatory logistics – a process of prediction, not reaction. Current and emerging technologies are providing access to predictive, real-time information and helping develop future systems with comprehensive situational awareness capability. Collaborative information sharing, using networks to reduce emphasis on ownership and place it on access, will allow convergence at strategic, operational, and tactical levels of war. This will alter the functions and structure at each echelon of command and create the ability to gain access to organizations that may not even be in theater—whether they provide an analytic or logistics service, produce lethal or non-lethal effects, or offer protection.²⁵

As joint and combined force operations become the norm, more attention is being placed on mutual support relationships across the force. Significant effort is being put forth in adapting logistics forces and systems to integrate support across services and coalition partners. The concept of total asset visibility and modularized support packages allows for optimized support of the force. Visibility of common systems and repair parts, single service responsibility for specific commodity management for the entire force, and integrated maintenance responsibilities are concepts already practiced "ad hoc" that could be formalized in support of deployed forces.

Linked from foxhole to supply source and back again, information and optimized application of assets enables the delivery of the right supplies at the right place and time. The possible future of logistics support is depicted in Figure 2.

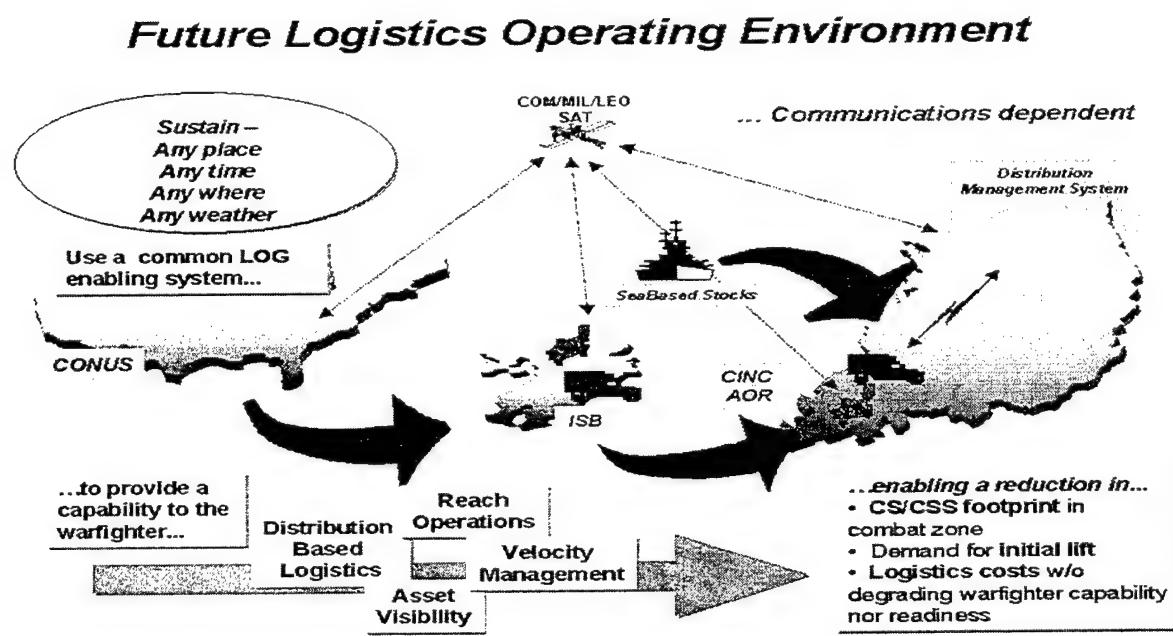


FIGURE 2 – FUTURE LOGISTICS SUPPORT

CONCLUSION

The United States military is poised at the crossroads of transformation. Army transformation is the deliberate process that will bridge the legacy force to the objective force of the future, but revolutionizing logistics is a key element of success for the overall military transformation effort. Logistics transformation must be more than the acquisition of new systems, but rather a transformation of logistics thinking.²⁶ A mental change is the major challenge faced by logisticians planning for the future. Stock piling supplies and services based on aged usage data must be practices of the past giving way to information based prediction and distribution. Recognizing that optimizing logistics systems and operations through information technology and force structure designed to meet joint task force requirements is

only one of the first critical steps. The future force will achieve new standards of logistics agility and responsiveness through an integrated system design (for example, common components); maximization of command, control, communications, computers, intelligence, surveillance and reconnaissance; CS and CSS reach capabilities; split-based operations; and aggressive application of technological innovations and information technology. It will drive the Army to reduce overall theater support requirements while continuing to employ host nation, allied, and contractor capabilities.²⁷ But the focus of future support transformation to the soldier must be focused across the joint and combined spectrum, not just single service.

As stated earlier, the future battlefield will be characterized by joint and combined operations with increased tempo, extended depth, and non-linearity. Current operations in Afghanistan provide a prime example of what the future battlefield may look like. The war is in essence an unconventional war being conducted by large numbers of Afghan forces supported by small units from the coalition operating over vast distances within the country.²⁸ The Area of Responsibility (AOR) is large and support bases are limited by political and diplomatic restraints. The primary resupply method is by air and air flow/routes into specific bases are not necessarily direct. Because of the battlefield asymmetry, there is no established continuity for logistics from Seaports of Debarkation (SPODs) or the Communication Zone (COMMZ) to forward logistical bases. The forces being sustained from these forward bases range from task organized company teams to JTF tailored battalion or brigade organizations. Probably the most interesting aspect of the support structure is that the Theater Support Command is more effectively described as Theater "Army" Support Command because of its lack of ability to support the Joint Land Component effort.

Future wars are going to become increasingly complex and will demand logistical ingenuity; an ingenuity that begins now and must be developed to meet future needs. Strategic logistics transformation plans and concepts for future Army logistics have already been discussed, but the key question that remains is how to optimize the efforts and the system for the future. Perhaps the Department of Defense Logistics Strategic Plan for FY 2000 provides a starting point. Outlining responsibilities and concepts, this DoD Plan highlights concepts previously addressed; Focused Logistics, common operating picture, and RML, as well as service responsibility for their individual *Component Logistics Strategic Plans*. What appears to be missing is the piece of the "plan" to integrate service planning to optimize the effort. As the Army pursues *RML*, the Navy *High Yield Logistics*, the Air Force *Logistics Transformation*, and the Marine Corps *Precision Logistics*, it would seem logical that DoD would act as integration agency to ensure elimination of redundancy of effort. The role of the Deputy Under Secretary of

Defense for Logistics and the Logistics Reform Senior Steering Group, along with the Joint Requirements Board and Joint Requirements Oversight Council (JROC), should serve as the honest broker to ensure the military is executing programs that will provide the greatest benefit at efficient cost.

Understanding that future operations will most likely be joint, combined, multinational or a combination of all of these, is it feasible to continue to have each service retain logistics support of its own forces as outlined in Joint Pub 4-0? The entire military is transforming, not just the Army. Although the exact organization and composition of the Objective Force is unknown at this time, the Army has delineated what is expected from the force; a more responsive, deployable, agile, versatile, lethal, survivable, and sustainable entity. Evaluating logistics capabilities across the Combined/Joint Task Force (CJTF) would immediately identify redundancies that could be eliminated, thus optimizing force structure and logistics footprint. This was the center theme of RAINBOW SERPENT, an American, British, Canadian, and Australian (ABCA) exercise conducted in fall 1998.

In concert with eliminating redundancy, the JROC must enforce discipline in providing oversight on new programs. For example, the United States Marine Corps (USMC) is currently acquiring trucks different from the Army's FMTV. Capability requirement may be similar, which should preclude a new start for the USMC, reduce the logistics footprint in theater and the overall logistics cost because of the commonality of the system between services. The concept of system commonality and shared information in a network centric environment must be applied across all services if the U. S. military is going to truly operate as a joint force on the future battlefield.

In light of the joint focus of the future, stovepipe support systems in the individual services will not support focused logistics efforts. Stovepipes, with their single functional focus, create unnecessary layers that are often more procedure than customer oriented.²⁹ This type of operational environment often causes duplication of effort and wastes limited resources. The military logistics community must develop an operationally joint and combined, centrally orchestrated logistics "system of support systems" to meet future needs.³⁰

Current and proposed U. S. military doctrine is based on Title 10 of the United States Code which requires each service component to train and supply its own forces. Based on these constraints, operational commanders depend on service components to provide forces to accomplish the logistics mission. This dependency leads to an operational theater where each service, as well as allied and coalition partner, establishes individual logistics organizations to provide support to its forces. The individuality of the system results in conflicts in priority of

support as service-specific logisticians strive to meet the demands of his individual customer while, in many cases, competing with another organization for the same resources. Our current systems do not provide a logistics commander with TAV or authority needed to accomplish cross-leveling tasks. In addition, this lack of a single joint logistics commander or organizational structure does not allow for management of common, critical items of supply that may exist in limited quantities. The Army specific Theater Movement Control Agency (TMCA) coordinates use of transportation networks, but this process may occur while the Air Force, Marine Corps, or coalition members are attempting to use the same networks. A clearly defined unity of command and control is a crucial advantage to any organization, and logistics organizations are no exception.³¹ Multiple logistics command and control organizations detract from achieving any unity of effort.

To meet the concept for future joint operations, the primary focus of the logistics community should be to maximize effectiveness and efficiency while providing support in the joint and combined environment. To do so, I concur with Lieutenant Gary Engel's belief that, "the military must develop a single, theater-level, operational logistics command and control organization that is both joint and combined in nature."³² This organization would report directly to the CINC of the theater and be responsible and accountable for all required logistics support provided by U. S. forces in theater. A joint logistics command allows for operations that are focused, efficient, and effective. Support priorities, asset visibility, movement control, and management of scarce resources are simplified through a centralized command and control structure.

This concept is not without challenges. Politically sensitive issues must be addressed in a modification of Title 10 of the United States Code and inter-service rivalries must be set aside before the command can become reality. It also may not be possible to establish a combined command with foreign allied or coalition forces in a multinational environment because of political, economic, or political reasons. But even with these challenges, the joint logistics command is within the realm of possibility as evidenced by LTG Gus Pagonis' 22d Support Command (Provisional), an ad hoc organization that was tasked with ensuring adequate logistics support during Desert Shield/Storm.

Changes in the world political environment have resulted in a transforming military with defining strategies of decisive force, overseas presence, strategic agility and power projection. Innovation and optimization in logistics systems and support are needed to meet the changing requirements on the horizon. Focused logistics, interoperability, efficient and effective use of distribution assets, and changes in force structure and doctrinal practices are the key to success

in supporting the deployed force. Logistics must continue to develop into a combat multiplier versus cumbersome impediment to the operational effort. Logistics systems in the 21st century will become more integrated, blurring traditional distinctions between strategic, operational, and tactical logistics.³³ The logistics system of the 21st century will be a more agile player in the international environment. Future logistics will feature a more joint perspective in lieu of more traditional individual service systems. Logistics forces will be more capable of supporting ad hoc multinational coalitions and satisfying contingency operations. Network centricity and collaborative information sharing to provide near real-time situational awareness will be the order of the day and will be the key to anticipating logistics in lieu of reacting to requirements.

What does the future have in store for combat and logistics forces? How will information and systems interface to ensure responsive, continuous, uninterrupted support to the warfighter? Is STOL and sea based logistics an option? Will logistics still be service-centric or operated as an optimized joint system with a centralized joint logistics command?

Concepts to support the Army's Objective Force and the future military are under development now. Meeting the Army's goals of sustaining the force with a reduced logistics footprint will require an optimized support structure; a support structure that is not service-centric, but able to maximize the assets and systems available across the CJTF. As innovations in technology to reduce consumption and maintenance take place and enhancements in distribution and asset visibility become common place, the logistics force of the future must transform with a focus on optimizing systems in light of efficiency and cost. The U.S. military logistics structure is poised to take the quantum leap necessary to change and meet tomorrow's challenges.

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ENDNOTES

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⁵ COL Edward J. Filiberti, COL James R. Owen, and COL James H. Thomas, The Army Transformation: A Case Study, (Carlisle Barracks: U.S. Army War College, 12 October 2001), 3.

⁶ Shinseki, 162.

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¹⁰ MG Terry E. Juskowiak, "Better, Stronger, Faster: Army Transformation and Early Entry Operations," Army Logistician (November-December 2001): 1.

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¹³ Dubik, 6.

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¹⁸ Ibid., 3.

¹⁹ Ibid., 4.

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²⁴ MG Charles C. Cannon, Jr., "Logistical Challenges on the Battlefield," ARMY, October 2000; Available from http://www.ausa.org/transformation/article_logistical.html; Internet; accessed 1 January 2002.

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²⁸ Eugene Thompson thompsonel@kuwait.army.mil, "Some Initial Observations," electronic mail message cc: Dennis Murphy Dennis.Murphy@csl.carlisle.army.mil, provided by Bernard Griffard <Bernard. Griffard@csl.carlisle.army.mil>, 9 January 2002.

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³¹ Ibid., 3.

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³³ Steven P. Ferris and David M. Keithly, "21st Century Logistics: Joint Ties That Bind," Parameters, Autumn 1997; Available from <http://www.carlisle.army.mil/usawc/parameters/97autumn/keithly.htm>; Internet; accessed 11 December 2001.

GLOSSARY

ASLP	Army Strategic Logistics Plan
ASMP	Army Strategic Mobility Plan
CJTF	Combined Joint Task Force
COMMZ	Communications Zone
CS	Combat Support
CSS	Combat Service Support
DBL	Distribution Based Logistics
DBLS	Distribution Based Logistics System
FCS	Future Combat System
FMTV	Family of Medium Tactical Vehicles
GIG	Global Internet Grid
GCSS-A	Global Combat Service Support System – Army
IAV	Interim Armored Vehicle
IBCT	Interim Brigade Combat Team
ISB	Intermediate Support Base
JLOC	Joint Logistics Operating Cell
JTAV	Joint In Transit Visibility
JTF	Joint Task Force
LAV	Light Armored Vehicle
LOC	Line of Communication
LTO	Logistic Tasking Order
LZ	Landing Zone
MRS	Mobility Requirements Study
OMFTS	Operational Maneuver From The Sea
OSC	Operational Supply Capability
RML	Revolution in Military Logistics
S & T	Science & Technology
SASO	Support and Stability Operations
SPOD	Sea Port of Debarkation
STOL	Ship to Objective Logistics
TAV	Total Asset Visibility
TMCA	Theater Movement Control Agency

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